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## Operation and installation manual

### PrimoBox AZB mixing units with low-loss header 200 and 300 series in cabinets

- + Read the manual before using the device
- + Pay attention to all information regarding safety
- + Keep the Operation and installation manual

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# 1 Explanations to the installation and operation manual

Installation and operating instructions are an important part of the delivery. That is why we recommend:

- ▶ Read the installation and operating instruction before installing the device.
- ▶ Keep the installation and operating instruction for the entire life of the device.
- ▶ Hand over the installation and operating instructions to any subsequent owner or user of the device.

## 1.1 Safety messages and hazard categories

**DANGER** Specifies the type and source of the threat.



- ▶ Describes what to do to avoid a hazard.

Threats have 3 levels:

Danger	Importance
<b>DANGER</b>	DANGER indicates a hazardous situation, which, if not avoided, will result in death or serious injury.
<b>WARNING</b>	WARNING indicates a potentially hazardous situation, which, if not avoided, can result in serious injury or equipment damage.
<b>NOTICE</b>	NOTICE indicates a hazardous situation, which, if not avoided, can result in equipment damage.

## 2 Information on safety

### 2.1 Intended use

Mixing units PrimoBox AZB 200 and 300 series are a compact, prefabricated solution enabling quick and convenient connection of a heat source and two or three heating circuits in closed installations made in accordance with EN 12828.

Mixing units AZB series 200 and 300 are intended for separating the medium into two or three heating zones. Depending on the version, individual zones can be supplied with medium of the temperature obtained at the outlet from the heat source (direct circuits, without mixing), as well as of a lower temperature, obtained by mixing.

Any other use than indicated in point 2.1 is forbidden.



## 2.2 Quality control

Construction of mixing units PrimoBox AZB complies with the current state of the technical standards regarding safety. Each device is checked for safety before shipment.

- ▶ The product should only be used if it is in a qualified technical condition. Read the instructions for assembly and use as well as observe the relevant safety regulations.

### WARNING



#### **Mains voltage (230 V AC) can cause serious injury or death.**

- ▶ Do not allow the device cover to come into contact with water.
- ▶ Disconnect the device from the mains before opening the cover.
- ▶ Disconnect the device from the mains before servicing.
- ▶ Do not make any changes to the device.

## 2.3 Qualification of personnel

Mixing units PrimoBox AZB series 200 and 300 may only be installed, commissioned, shut down and disassembled by suitably qualified and trained personnel. Work on electrical circuits should only be carried out by an authorized electrician.

## 2.4 Modifications to the product

Changes and modifications carried out by unauthorized persons may cause hazards and are prohibited for safety reasons.

## 2.5 Using additional parts and accessories

Improper additional parts and accessories may damage the device.

- ▶ Use only original spare parts and accessories from the manufacturer.

## 2.6 Liability

The manufacturer is not responsible for direct damages or their consequences resulting from inaccurate reading of assembly and usage instructions and recommendations.

The manufacturer and the company selling the device are not responsible for damages and costs incurred by the user or third parties using the device, in particular for damage resulting from improper use indicated in chapter 2.1 of assembly and use instructions, improper or faulty connection or maintenance and non-compliant operation with manufacturer's recommendations.



AFRISO sp. z o.o. makes every effort to ensure that the information materials do not contain errors. If errors or inaccuracies are found in the following installation and operation instructions, please contact: [zok@afriso.pl](mailto:zok@afriso.pl), tel. +48 32 330 33 55.

### 3 Product description

PrimoBox AZB mixing units are available in versions supplying two or three heating circuits.

PrimoBox AZB mixing units with a low-loss header secure the correct flow rate of the medium and the correct operation of the pumps in all heating circuits. They also allow obtaining different flow temperatures of individual heating circuits.

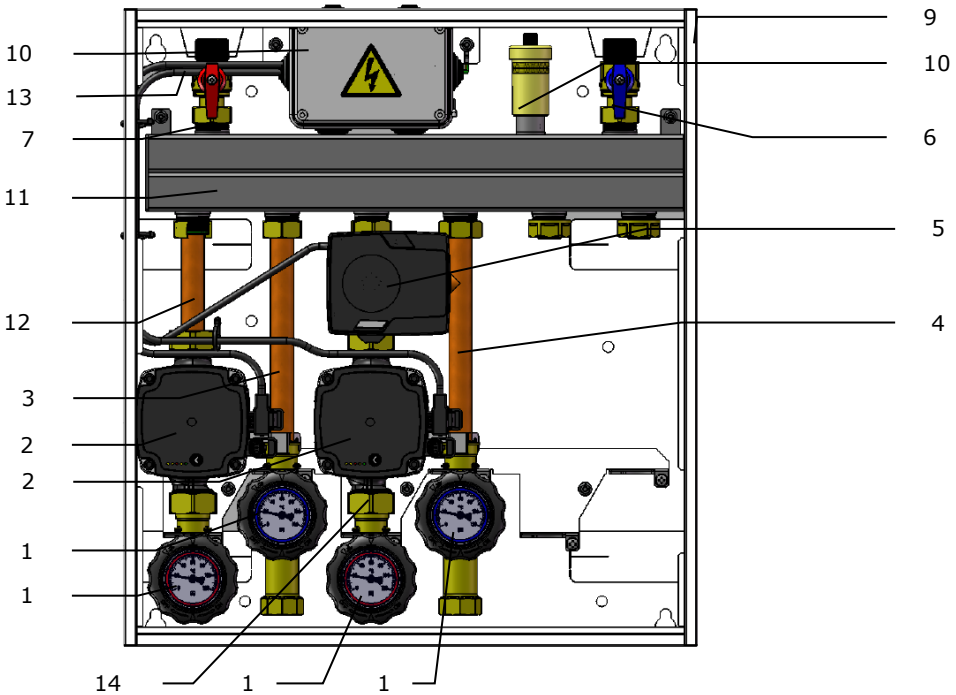
The PrimoBox AZB mixing unit is enclosed in a metal cabinet. Inside the cabinet there is a manifold with a built-in low-loss header ensuring independent operation of individual heating circuits, while minimizing the impact of circulation pumps on the heat source.

There are versions with heating circuits without mixing, with mixing by an ARM ProClick actuator on a rotary valve or by mixing with an ATM thermostatic mixing valve.

Two-section versions of AZB mixing units are made based on the same manifold as three-section version, but only two pairs of connections are used.



### 3.1 Construction



- 1- shut-off valve with thermometer
- 2- Grundfos UPM3 AUTO 15-70 130 mm pump
- 3- zone 1 return pipe
- 4- zone 2 return pipe
- 5- rotary valve with ARM ProClick actuator
- 6- primary circuit return shut-off valve
- 7- primary circuit supply shut-off valve
- 8- automatic air vent
- 9- cabinet
- 10- electrical box
- 11- manifold
- 12- zone 1 supply pipe
- 13- electric wires
- 14- zone 2 supply pipe

*Fig. 1: Construction of AZB 205 mixing unit*

## 3.2 Dimensions

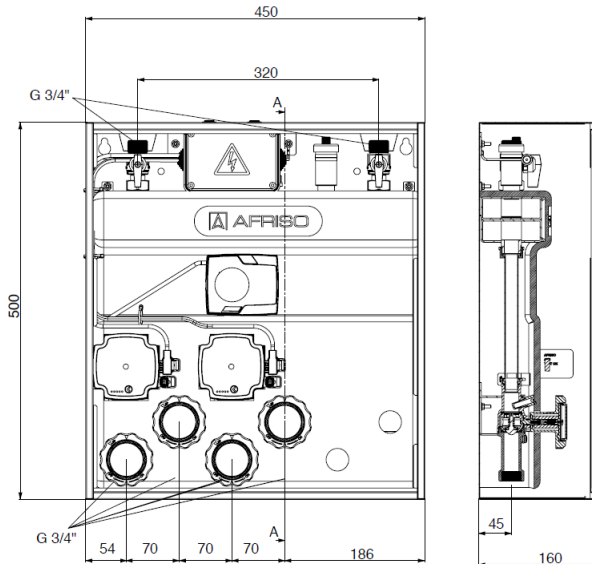


Fig. 2: Dimensions of the AZB mixing unit

In the two-zone version equipped with two ATM thermostatic mixing valves (Art. No. 76 211 00), middle and right connections are used to facilitate operation of the thermostatic valve knobs.

## 3.3 Operation

The mixing unit PrimoBox AZB with low-loss header is designed to divide the heating medium flow from the boiler circuit into two or three heating circuits. The manifold used with a built-in low-loss header eliminates the need to balance the primary circuit of the boiler with other circuits. This ensures smoothness and high efficiency of the installation operation regardless of the current hydraulic conditions and the current demand for heating power.

Using the PrimoBox AZB mixing unit with low-loss header allows reducing the use of number of fittings and pipes necessary to perform individual installation circuits, and helps to organize and simplify the entire installation.



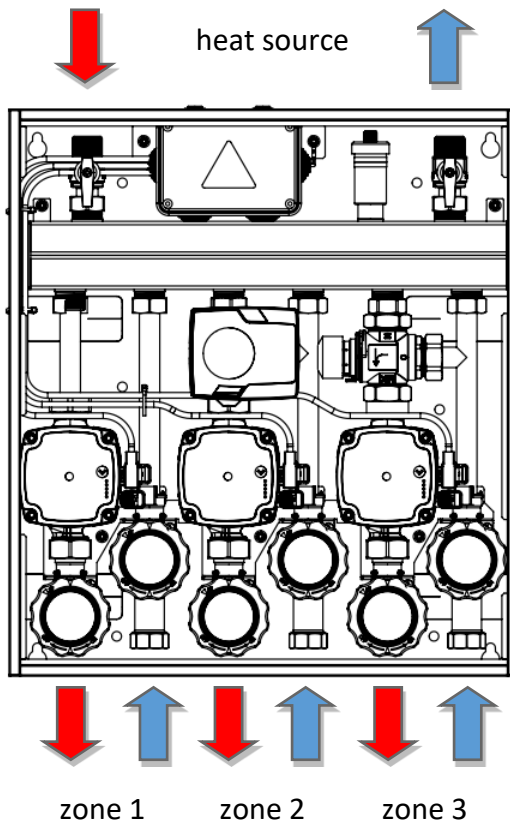
**Shut-off valves with thermometers**

AZB mixing units are supplied with built-in shut-off valves to facilitate product maintenance. Check valves have been built into the shut-off valves. Space for temperature sensors has also been prepared. The valve knobs contain thermometers to control the temperature of the heating medium. By turning the knob by 45°, the non-return valve is forced to open to enable system maintenance and system filling.

**Grundfos UPM3 AUTO 15-70 circulation pumps**

For the operation of the Grundfos UPM3 AUTO circulation pumps included in the PrimoBox units, please refer to the attached operating instructions (also available on the manufacturer's website).

**Connections for AZB mixing units**



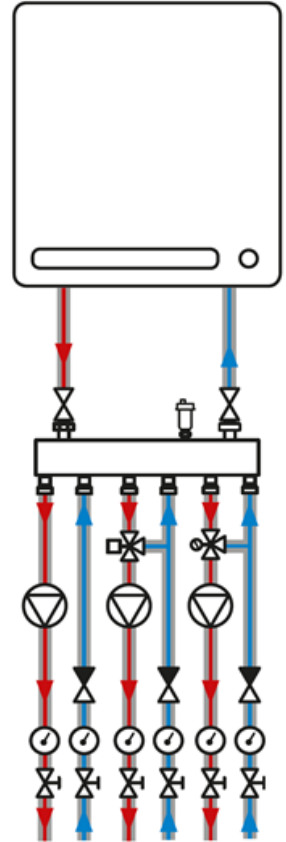
*Fig. 3: Connections of PrimoBox AZB 351 mixing unit*





### 3.4 Hydraulic diagram sample

Fig. 4: PrimoBox AZB 351 hydraulic diagram



### 3.5 Sample application diagrams

1. AZB mixing unit
2. Installation controller
3. Underfloor heating circuit
4. Radiator circuit

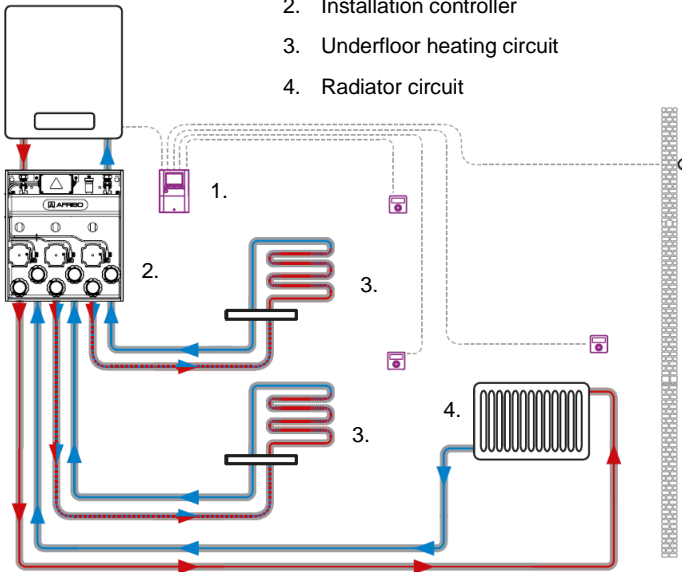


Fig. 5: Sample application diagram - 2 circuits of underfloor heating system and a radiator system circuit



## 4 Specification

Table 1: Technical data of AZB 200 & 300 units

Parameter / part	Value / Description
<b>General specification</b>	
Dimensions (W x H x D)	450 x 500 x 160mm
Weight	13 ÷ 22 kg
Circulation pumps	Grundfos UPM 3 AUTO 15-70 130 mm
Thermostatic mixing valve	ATM 561 with Kvs 2.5 with 20-43°C control
Rotary mixing valve	Kvs 3,6 with 3-point ARM ProClick 230 V AC 50 Hz
Water capacity of the manifold with low-loss header	1,5 l
Pressure	max 4,5 bar
Heat source connections	G $\frac{3}{4}$ "
Connection of individual zones	female G $\frac{3}{4}$ "
Heating medium temperature	5°C ÷ 95°C
Glycol concentration	max 30%
Installation power	max 35 kW
<b>Supply voltage</b>	
Supply voltage	230 V AC ± 10%, 50 Hz
Power consumption	max 52 W
Housing protection	IPX 0

### 4.1 Approvals

Mixing units with manifold AZB series 200 and 300 are subject to the Pressure Directive 2014/68/EU and in accordance with art. 4.3 (sound engineering practice) are not CE marked.

Circulation pumps included in the product have a declaration of conformity, which is available on the manufacturer's website.

The ARM ProClick electric actuators used in the AZB units comply with EU directives on low voltage electrical equipment LVD (2014/35/EU) and electromagnetic compatibility EMC (2014/31/EU).



## 4.2 Flow and available pressure diagrams

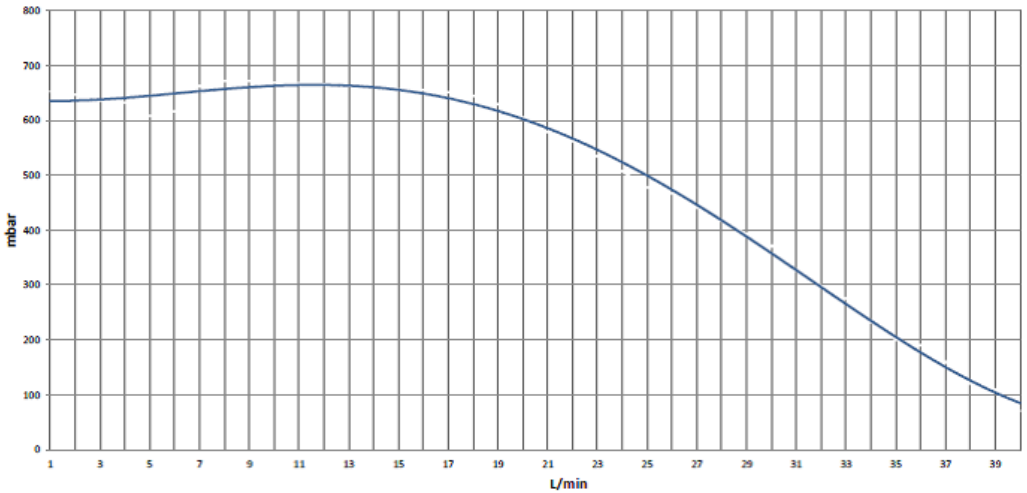


Fig. 6: Graph of flow rate and disposal pressure through a direct circuit

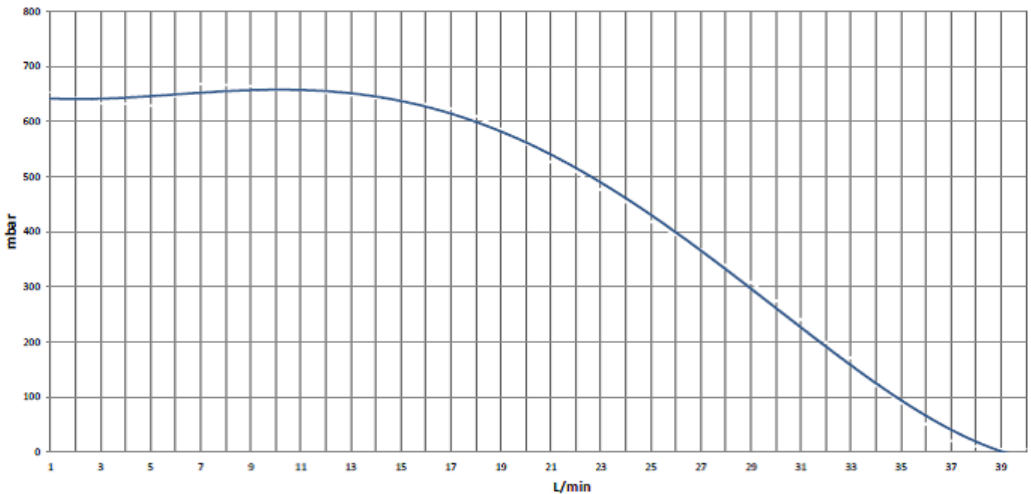


Fig. 7: Graph of flow rate and disposal pressure through a circuit with rotary mixing valve

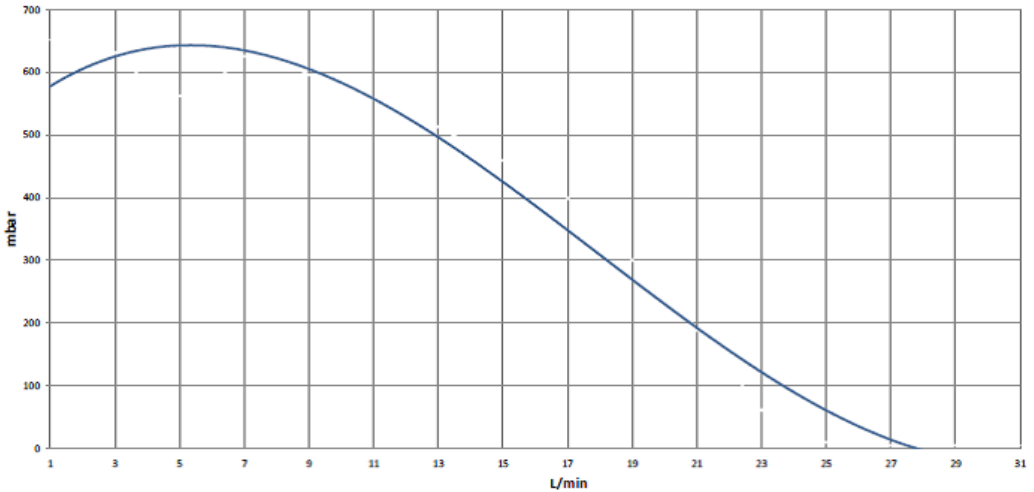


Fig. 8: Graph of flow rate through the circuit with ATM thermostatic mixing valve

## 5 Transport and storage

**ATTENTION**



**Possibility of damage to the device during improper transport.**

- ▶ Do not throw the device.
- ▶ Protect against water, moisture, dirt and dust.

**ATTENTION**



**Possibility of damage during incorrect storage.**

- ▶ Store the device in a dry and clean room.
- ▶ Protect against water, moisture, dirt and dust.

## 6 Installation and commissioning

The place where the AZB kit is installed must provide weather protection. The AZB module must not be installed outdoors. The AZB unit is designed for wall mounting or to embed it in the wall. It cannot be mounted on stands or placed directly on the floor.

### ATTENTION Possible damage to existing installations



- ▶ When drilling into walls, pay special attention not to damage electric cables or other existing cables.

### 6.1 Wall mounting

On the selected, straight wall, mark the places provided for the handles so that they coincide with the holes in the back of the PrimoBox AZB mixing unit. Drill holes in the wall and place the dowels (included in the delivery) in them. Hang the module on the dowels. Then check the correct leveling.

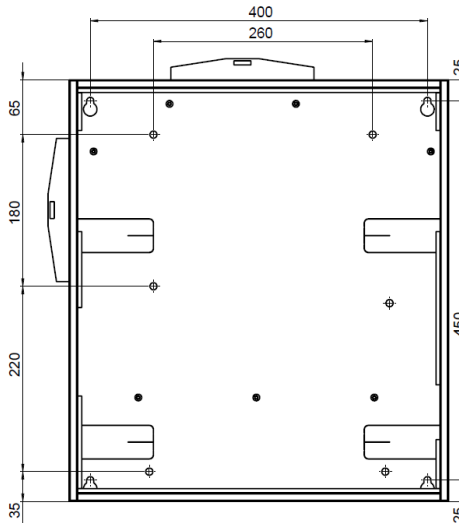


Fig. 9: Spacing of mounting holes

### Possible need for other dowels

#### ATTENTION



- ▶ It is necessary to verify that the dowels provided are suitable for the selected wall.
- ▶ If the dowels provided are not suitable for the selected wall, replace them with others.
- ▶ Mounting the AZB unit on the improper dowels can lead to its breaking off the wall!

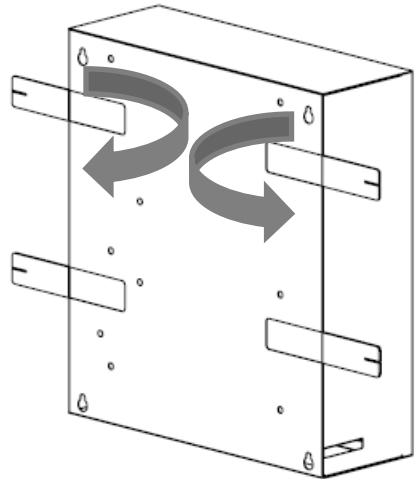
## 6.2 Flush mounting

Check whether the wall is strong and thick enough and that the PrimoBox AZB mixing kit will fit in the place you choose.

To install the PrimoBox AZB mixing kit in the wall, breach the fins placed in the housing and bend them with pliers so that they are outside the unit housing (Figure 10).

Then create a space in the wall, at least 2 cm larger than the external dimensions of the housing of the AZB mixing kit. Fasten the module in the hole in the wall with plaster or other suitable compound. Remember to level it carefully using a spirit level.

After drying, if necessary, make an aesthetic finish of the wall.



*Fig. 10: Bending of the housing fins*

## 6.3 Hydraulic connections

Before connecting the AZB mixing unit, flush the system thoroughly, paying special attention to removing residue from soldering, cutting pipes, etc. Make sure that the installation contains safety components necessary for proper and safe functioning. We recommend installing strainers before inlet connections. The heating installation should also contain filters, dirt separators or other similar filtering elements.



## 6.3.1 Connection of the primary circuit

### 6.3.1.1 Connection to the heat source

The connection between the AZB mixing unit and the heat source (e.g. gas boiler) takes place via the supply and return connections at the top of the unit. The connection should be made by G $\frac{3}{4}$  male threads.

### 6.3.1.2 Connection with the AFRISO PrimBox AHB separation unit

AZB mixing units can be combined with the AHB 620 and AHB 622 separation units to form a heating column with the function of separating two heat sources and all functions of the AZB sets.

This connection is carried out by the AJB 110 junction kit (Art. No. 76 110 00).

The figure shows a heating column built from the connected AHB and AZB units.

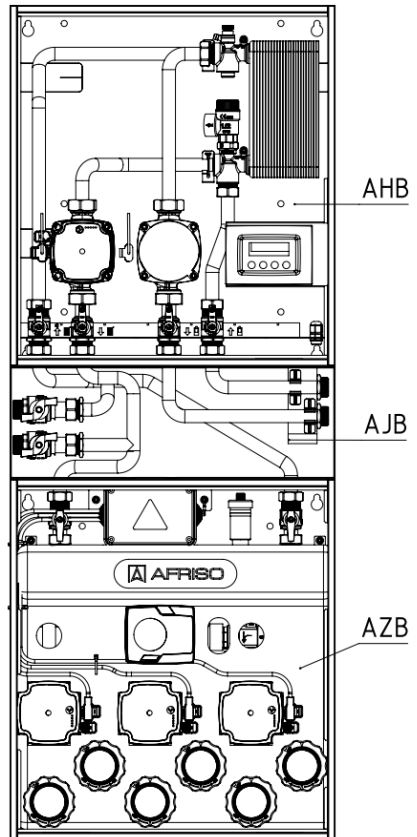


Figure 11: Heating column:  
AHB + AJB + AZB units



### 6.3.2 Connection of individual heating circuits

The connection between the mixing unit and the heating system is made by pairs of supply/return connections located at the bottom of the AZB mixing unit 200 series (2 pairs) or 300 (3 pairs).

The PrimoBox AZB 200 and 300 mixing units are equipped with threaded female G $\frac{3}{4}$ " connections.

## 6.4 Electrical connections

- Make sure that the power supply has been disconnected and protected against accidental switching on.

Safety regulations and other relevant accident prevention regulations must be observed. You should also comply with all applicable national laws. The PrimoBox AZB mixing unit is connected to 230V AC.

PrimoBox mixing units have a built-in electrical box. All necessary cables have already been distributed from the electrical box.

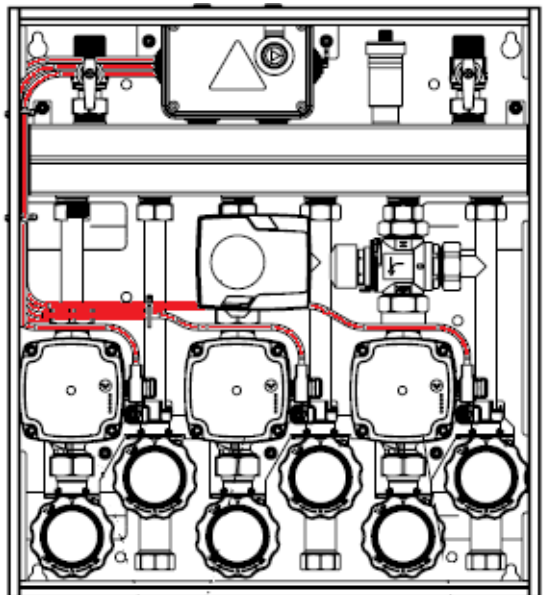
### WARNING



Do not allow actuators, built-in electrical box and cables into contact with water.

An example of cable distribution is shown in Fig. 12. The number of electric wires varies depending on the number of electric actuators and pumps in the set.

*Fig. 9: Sample distribution of electric wires*







Depending on the version, it is necessary to make additional connections of pumps and electric actuators with the controller or controllers via the built-in electrical box.

In this case, make an electrical connection of the controller with the AZB mixing unit according to the diagram (Fig. 13).

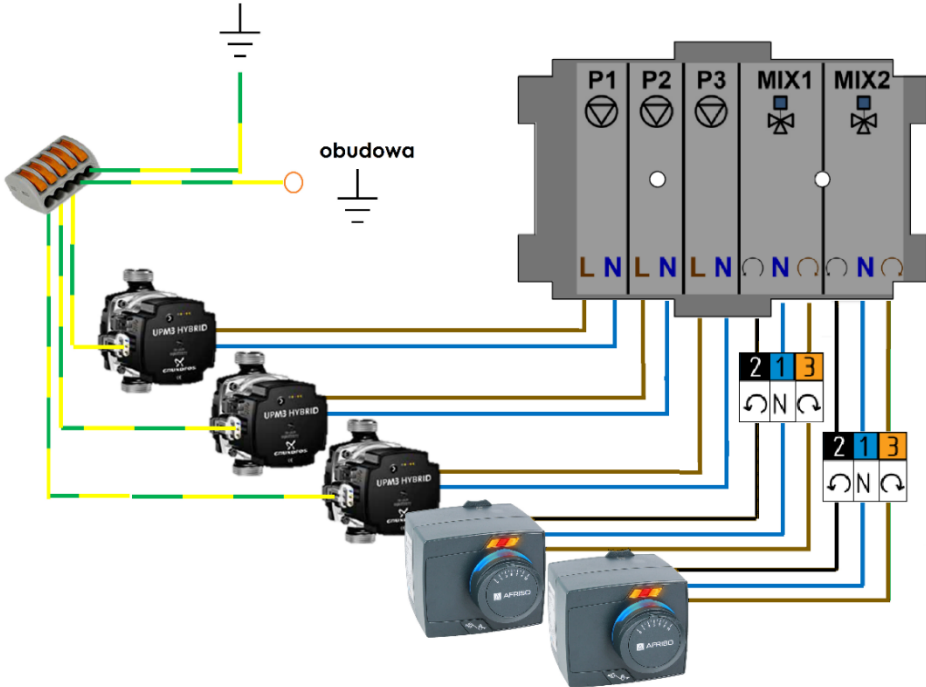


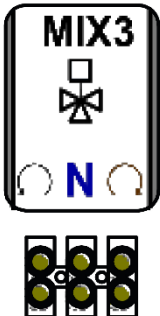
Fig. 10: Electrical diagram of the mixing unit PrimoBox AZB 355 with two ARM ProClick actuators

ARM ProClick actuators must be electrically connected to a suitable 3-point controller with a 230 V AC control signal.

In the version of the AZB 365 mixing unit with three actuators, one of the actuators is connected via a loose triple connection block placed inside the electric box - see Fig. 14.

Fig. 14: Electrical diagram of connecting the third ARM ProClick actuator in the AZB 365 mixing kit through a loose connection block.

The actuator power cord is detachable, which simplifies installation and electrical work. To remove the plug from the actuator, pry the lid latch lever and slide the cover off the actuator housing (Fig. 15), then unplug the plug (Fig. 16). The plug fits into the socket only in one position.





*Fig. 11: Removing the lid*

*Fig. 12: ARM ProClick actuator plug*



## 7 Assembly and disassembly of ARM ProClick actuators

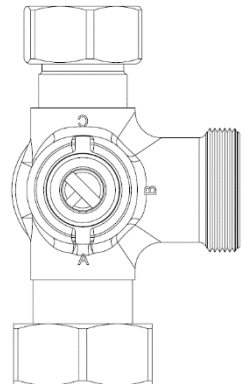
The PrimoBox AZB unit is equipped with ARM ProClick electric actuators. They can be easily disassembled and reassembled.

The ARM ProClick actuators are removed from the valve by pressing the button on the side of the actuator housing and pulling the actuator towards you.

*Fig. 13: Actuator latch release button*



To mount the ARM ProClick actuator on the mixing valve of the AZB unit, the mixing valve must be set to "50% opening", i.e. the center of its valve is exactly halfway between the hot water inlet and the cold water inlet. Then slide the actuator onto the mixing valve until the ProClick mechanism locks on it. When mounting the ProClick actuator on a rotary valve, pay attention to the current position of the valve cover. The valve stem should be positioned as in Figure 19, and the actuator position indicator should show half the scale. If the valve is in a different position, set it manually (using a flat screwdriver, for example) as shown in Figure 19. If the indicator on the actuator does not indicate the center of the scale, switch it to manual operation mode, set the actuator with the allen key so that the indicator is in the center of the scale. After putting the actuator on the valve, switch back to automatic mode.



*Fig. 18: Correct position of the rotary mixing valve when installing the actuator*

## 8 Switching the actuator to manual operation

Switching from automatic to manual operation is carried out by operating the mode button. The pressed mode button enables manual operation, i.e. free operation of the actuator with an allen key.



Fig. 14: Actuator mode button

## 9 Temperature setpoint with ATM thermostatic valve

The temperature of the heating medium at the MIX outlet of the ATM valve is set by a knob, according to the following table.

setpoint	temperature
1	20°C
2	25°C
3	29°C
4	33°C
5	37°C
6	43°C



Fig. 20: ATM 561 thermostatic valve knob

The selected setting on the knob should correspond to the blue arrow-shaped indicator.



## 10 Decommissioning, scrapping



1. Disconnect the device's power supply.
2. Disassemble the device (see chapter 6, reverse order).
3. In the interests of environmental protection, do not dispose of the device when it is out of service with unsorted household waste. The device should be delivered to an appropriate recycling facility.

The AZB 200 and 300 series mixing units are made of materials that can be recycled.

## 11 Warranty

The manufacturer's warranty for this product is 36 months after the date of purchase from AFRISO sp. z o.o.. In case of any alteration in the product or usage against this instruction manual, the warranty becomes void.

## 12 Copyright

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## 13 Customer satisfaction

For AFRISO sp.z o.o. customer satisfaction is the most important thing. If you have questions, suggestions or problems with the product, please contact: [zok@afriso.pl](mailto:zok@afriso.pl), phone number +48 32 330 33 55.

## 14 Addresses

The addresses of companies representing the AFRISO group around the World can be found at [www.afriso.com](http://www.afriso.com).